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APPLICATION FOR LETTERS PATENT

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**Golf Club Iron Head, Correlated Set Of
Individually Numbered Golf Club Irons, Method Of
Matching A Golf Club To A Golfer, And Method
Of Matching A Set Of Golf Clubs To A Golfer.**

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INVENTOR

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1 **Golf Club Iron Head, Correlated Set Of Individually Numbered Golf**
2 **Club Irons, Method Of Matching A Golf Club To A Golfer, And**
3 **Method Of Matching A Set Of Golf Clubs To A Golfer**

4 **TECHNICAL FIELD**

5 This invention relates to golf club iron heads, to correlated sets of
6 individually numbered golf club irons, to methods of matching a golf club
7 to a golfer, and to methods of matching a set of golf clubs to a golfer.

8
9
10 **BACKGROUND OF THE INVENTION**

11 A complete set of golf club irons typically includes a set of twelve
12 irons numbered from 2 (long) through 9 (short), a pitching wedge (PW), a
13 gap wedge (GW) and a sand wedge (SW). A 1-iron is also sometimes
14 included in the set, although the average golf club set does not include a
15 1-iron due to difficulty in using the club. Each iron typically comprises a
16 head including a hosel and a shaft which is attached to the head by fitting
17 the shaft into a bore of the hosel. The hosel is integrally formed as part
18 of the head. The head also includes a heel, a bottom sole, a toe, a planar
19 striking face, and a back side.

20 The typical twelve irons of a golf club set have varying degrees of
21 loft angle. The loft angle of an iron is the angle between a vertical plane,
22 which includes the shaft, and the plane of the striking face of the iron. The
23 loft angle effects how much loft is imparted to the ball when it is struck
24 by the tilted, striking face.

1 Longer-hitting irons (i.e., #2, #3, #4) have progressively longer golf
2 club shafts than the shorter-hitting irons (i.e., #5, #6, #7, #8, #9, PW, SW).
3 Typically, the length of the golf club shaft progressively increases in length
4 from PW through the 2-iron. Further, it is a typical design criteria that each
5 golf club within a set have the same substantially identical swing weight.
6 As the volume of shaft is different for each club due to varying length, the
7 mass of the club head is varied inversely to the length of the shaft such that
8 a substantially constant swing weight is achieved for each club within a
9 complete set. Accordingly, typically the PW head is heaviest and the 2-iron
10 head is lightest within a given set 2-iron through PW.

11 The amount of spin imparted to a golf ball is affected by a
12 combination of the design of the club head and the impact the golfer makes
13 with the ball. Professional golfers, because of their ability, typically can
14 modify their swing and impact selectively, particularly with the higher
15 numbered short irons, to affect the degree of backspin a ball will have when
16 hitting the green. Degree of backspin on the ball when it hits in part
17 determines where the ball will stop. At some point, the back spin can
18 become so great that the ball draws back from where it hits the green.

19 Relative to head design, probably the most significant feature impacting
20 the degree of backspin that can be put on a ball relates to the groove design
21 in the face of a golf club iron head. The U.S.G.A. has rules which impact
22 the configuration of groove design for golf clubs. The existing U.S.G.A.
23 rules read:
24

1 A series of straight grooves with diverging sides and a
2 symmetrical cross-section may be used (see Fig. IX). The width
3 and cross-section must be consistent across the face of the club
4 and along the length of the grooves. Any rounding of groove
5 edges shall be in the form of a radius which does not exceed
6 0.020 inches (0.5 mm). The width of the grooves shall not
7 exceed 0.035 inches (0.9 mm), using the 30 degree method of
8 measurement on file with the United States Golf Association.
9 The distance between edges of adjacent grooves must not be less
10 than three times the width of a groove, and not less than 0.075
11 inches (1.9 mm). The depth of a groove must not exceed
12 0.020 inches (0.5 mm).

13 It would be most desirable to develop improved groove designs which
14 fall within the scope of the existing or future U.S.G.A. rules.
15

16 SUMMARY

17 The invention includes a golf club iron head, correlated sets of
18 individually numbered golf club irons, methods of matching a golf club to
19 a golfer, and methods of matching a set of golf clubs to a golfer. In one
20 implementation, a golf club iron head includes a front striking face, a sole,
21 a toe, and a heel. The front striking face has a planar area having a top
22 and a bottom. The front striking face has a series of grooves of a common
23 cross sectional shape from the top to the bottom. Individual grooves have
24 a base and opposing sidewalls which diverge from the base and extend
outwardly in the direction of the front striking face. The sidewalls include
opposing protrusions extending into the groove proximate the front striking
face. In one preferred embodiment, the respective opposing sidewall

1 protrusions comprise a curved outer surface which starts from the front
2 striking face and curves continuously to its sidewall.

3 In one implementation, the front striking face of a golf club iron head
4 defines a symmetrical groove cross section. The groove base comprises a
5 base protrusion extending in the direction of the front striking face. The
6 base protrusion has an apex received inwardly of the front striking face.

7 In one implementation, a correlated set of individually numbered golf
8 club irons have heads progressing from a high numbered head to a low
9 numbered head. Individual heads have a front striking face, a sole, a toe,
10 and a heel. The front striking faces of heads within the set individually
11 have a planar area defining a progressively decreasing loft angle in going
12 from the high numbered head to the low numbered head. The planar area
13 has a top and a bottom. Individual front striking faces have a series of
14 grooves of a common cross sectional shape from the top to the bottom. For
15 at least two chosen pairs of heads within the set, the grooves are configured
16 to provide decreasing golf ball spin in going from the lower numbered head
17 to the higher numbered head in the pair if the golf ball were hit by the
18 faces by identical impacts at the same loft angle.

19 Either or both of the above first two stated implementations, and/or
20 others, might be utilized in the third stated implementation. Further, the
21 invention contemplates methods of matching a golf club to a golfer and
22 methods of matching a set of golf clubs to a golfer independent of the first
23 three stated implementations.
24

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are described below with reference to the following accompanying drawings.

Fig. 1 is a front striking face area view of an iron golf club head in accordance with an aspect of the invention.

Fig. 2 is a sole view of the iron golf club head of Fig. 1.

Fig. 3 is a toe-end view of the iron golf club head of Fig. 1.

Fig. 4 is a top view of the iron golf club head of Fig. 1.

Fig. 5 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

Fig. 6 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

Fig. 7 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

Fig. 8 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

Fig. 9 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

Fig. 10 is an enlargement of a portion of Fig. 9.

Fig. 11 is a diagrammatic sectional view of a groove design in accordance with an aspect of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

This disclosure of the invention is submitted in furtherance of the constitutional purposes of the U.S. Patent Laws "to promote the progress of science and useful arts" (Article 1, Section 8).

A first embodiment golf club iron head in accordance with but one aspect of the invention is initially described with reference to Figs. 1-5. Such shows various aspects with respect to a PW, although other numbered clubs are of course contemplated. The Figs. 1-5 club head is designated generally with numeral 10. Such comprises a front striking face 50, a rear face 52, a sole 54, a toe 56, a heel 58 and a hosel 60. Front striking face 50 defines a total, substantially planar, hitting area starting from where the hosel integrally forms into a planar hitting area. Horizontal scoring lines or grooves 55 are formed in striking face 50, and extend between a toe-end vertical terminus location 62 and a heel-end vertical terminus location 64. A preferred set of golf clubs would be manufactured in accordance with Table II of my U.S. Patent No. 5,388,826, which is hereby fully incorporated by reference, although such is in way required.

In Fig. 1, angle "B" is the lie angle. Dimension "E" is the height from a tangent line 49 of the sole to the highest point of the heel-side scoring line terminus. The heel-side scoring line terminus is generally constantly spaced throughout the set from the point where the planar portion of the hitting face starts becoming non-planar as it forms into the hosel, being approximately 6 mm outwardly therefrom. "H" is the distance from the heel-side scoring line terminus location to the furthest toe portion of the

1 head. "I" is the distance from the toe-side scoring line terminus and furthest
2 toe portion of the head. Dimension "D" is the distance between the sole
3 tangent and the highest-most elevation of the club head.

4 Fig. 2 is an upward sole view of a given club. Dimension "G" is
5 the thickness of the sole at the heel-side scoring line terminus. Dimension
6 "F" is the thickness of the sole at the toe-side scoring line terminus.
7 Dimension "J" is the thickness of the sole at the midpoint between the
8 respective heel-side scoring line terminus and toe-side scoring line terminus.

9 Referring to Fig. 3, "A" degrees is the loft angle and dimension "C"
10 is the offset angle between the base of the leading edge of the hitting face
11 and the forward-most portion of the hosel. In a preferred set, offset is
12 constant although varying or progressively changing offsets could, of course,
13 be provided.

14 Referring to Fig. 4, "L" is the thickness of the top-most portion of the
15 club at the striking face center between the respective heel-side scoring line
16 terminus and toe-side scoring line terminus. Dimension "K" is the thickness
17 adjacent the toe-most portion of the head. Dimension "M" is the thickness
18 of the top of the head over the heel-most side scoring line terminus.

19 The Fig. 1 view is taken with striking face 50 being vertically
20 oriented, or alternately considered with face 50 being parallel with respect to
21 the plane of the page. Accordingly, hosel 60 would angle significantly out
22 of the page in the direction of the reader in accordance with the loft angle
23 of the head.
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1 Grooves 55 in the preferred embodiment are provided as a series
2 associated with front striking face 50, and are of a common cross-sectional
3 shape from the top to the bottom of the planar hitting area and along their
4 length. Referring to Fig. 5, individual grooves have a base 13 and opposing
5 sidewalls 14 which diverge from base 13 and extend outwardly in the
6 direction of front striking face 50, and define a symmetrical groove cross
7 section. Various groove designs for base 13 and sidewalls 14 could be
8 utilized, with varying degrees of radius of curvature where sidewall 14 joins
9 with base 13 and striking face 50, with most preferably the groove design
10 being manufactured in accordance with U.S.G.A. rules. The illustrated and
11 preferred embodiment shows a general square groove construction, although
12 V-groove or other designs are of course contemplated, with the invention only
13 being limited by the accompanying claims appropriately interpreted in
14 accordance with the Doctrine of Equivalents.

15 As part of the base 13, a base protrusion 15 extends in the direction
16 of front striking face 50 and preferably runs along the length of the groove.
17 In the preferred embodiment, base 13 comprises only a single projection
18 within a groove 55, and has opposing base walls 16 which converge from
19 base 13 outwardly in the direction of hitting face 50, terminating at an
20 apex 17. By way of example only, a preferred angle range from face 50
21 for respective base walls 16 is from 45° to 89°. Apex 17 in the preferred
22 embodiment is defined on a base protrusion surface 18 which is curved.
23 Most preferably, base protrusion surface 18 has a substantially constant radius
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1 of curvature, with from about 0.001 mm to about 0.005 mm believed to be
2 preferred.

3 Base protrusion apex 17 is received inwardly of front striking face 50
4 by a distance "Z". Further, apex 17 is received outwardly from base 13 a
5 distance "O". Most preferably, distance "Z" is at least 0.001 inch inwardly
6 of front striking face 50 and no greater than about 0.018 inch.

7 Base 13 in the depicted and preferred embodiment preferably includes
8 a flat portion, with two flat portions 19 being shown. Further preferably,
9 apex 17 is preferably centrally located between sidewalls 14, as shown.
10 Further, base protrusion opposing sidewalls 16 have at least two and thereby
11 variable widths between groove sidewalls 14. In the depicted and preferred
12 embodiment, base walls 16 define a continuous variable width for
13 protrusion 15 between groove sidewalls 14 from a maximum dimension "P"
14 to a minimum dimension "Q". Preferably, the minimum width "Q" is no less
15 than about 0.001 inch, and the maximum width "P" is no greater than about
16 0.025 inch. It is expected, although not required, that the above groove
17 design will decrease backspin for increasing values of "Z", at least to some
18 undetermined value.

19 In accordance with but one aspect of the invention, aspects of the
20 above described preferred first embodiment are utilized in a correlated set of
21 individually numbered golf club irons having heads progressing from a high
22 numbered head to a low numbered head. Base protrusions having apexes are
23 utilized within the grooves of the heads, and the base protrusions and other
24 design features of the groove might be the same or different for different

1 clubs within the set. Regardless in accordance with this aspect of the
2 invention, for at least two chosen pairs of heads within the set, the apex is
3 displaced inwardly of the front striking face a greater amount in the higher
4 numbered head compared to the lower numbered head in the pair. The
5 words "set", "pair" and "pairs" are utilized in this document essentially in the
6 same manner as was used in my U.S. Patent No. 5,388,826. Accordingly,
7 a set constitutes a minimum of three clubs and any two chosen pairs in such
8 instance could include a common head from the set.

9 An exemplary correlated set in accordance with this aspect of the
10 invention is described with reference to Fig. 6, wherein different apexes 17,
11 17a and 17b are diagrammatically shown for different preferred heads within
12 the iron set. By way of example only, advantageous aspects of the invention
13 (for example, and by way of example only, wicking away of dirt and/or
14 grass upon impact) might be attainable by providing a 10-iron set of heads
15 having 10 different displacements "Z" of the respective apexes 17 from outer
16 hitting faces 50. Alternately by way of example only, advantageous aspects
17 of the invention might be attainable by providing a 10-iron set of heads
18 having only three or other number different size/dimensions "Z" for a full set.

19 Specifically and again by way of example only, the 2-iron head and
20 the 3-iron head might each be manufactured to have the exact same
21 dimension "Z" and otherwise the same groove configuration; the #4, #5 and
22 #6 be manufactured to each have another common, greater dimension "Z"; and
23 the #7, #8, #9 and pitching wedge be manufactured to each have yet another,
24

1 common further larger dimension "Z". Other relationships might, of course,
2 be used, with the invention only being limited by the concluding claims.

3 Preferably in accordance with a preferred correlated set, the groove
4 design is such that the grooves are configured to provide decreasing golf ball
5 spin in going from the lower numbered head to the higher numbered head
6 in the pair if the same golf ball were hit by the faces by identical impacts
7 at the same loft angle. In the first preferred Figs. 5 and 6 embodiments,
8 and where the correlated sets of clubs are otherwise manufactured to have
9 substantially the same groove configuration but for dimension "Z", the larger
10 the "Z" dimension, the lower it is believed will be the degree of spin,
11 assuming otherwise identical impacts of the golf ball at the same loft angle.
12 Accordingly, for otherwise identical impacts of a golf ball at the same angle,
13 a groove design with apex 17a is expected to produce the most backspin,
14 with projection apexes 17 and 17b producing progressively decreasing backspin
15 on the golf ball.

16 By way of example only, and not of limitation, believed preferred
17 ranges for "Z" for clubs 2 - PW are provided in Table I below.
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TABLE I

	Range for "Z" in inches	
	High	Low
#2	0.0010	0.0050
#3	0.0015	0.0055
#4	0.0020	0.0060
#5	0.0025	0.0065
#6	0.0030	0.0070
#7	0.0035	0.0075
#8	0.0040	0.0080
#9	0.0045	0.0085
PW	0.0050	0.0090

An aspect of the invention contemplates variability of dimension "Z" in a correlated set of golf clubs which, for at least two chosen pairs of heads within the set, the apex is displaced inwardly of the front striking face a greater amount in the higher numbered head compared to the lower numbered head in the pair independent of whether decreasing golf ball spin is produced in going from the lower numbered head to the higher numbered head in the pair if the golf ball were hit by the faces by identical impacts at the same loft angle. Further, an aspect of the invention contemplates a correlated set of individually numbered golf club irons where, for at least two chosen pairs of heads within the set, the grooves are configured to provide

1 decreasing golf ball spin in going from the lower numbered head to the
2 higher numbered head in the pair if the golf ball were hit by the faces by
3 identical impacts at the same loft angle independent of whether some or none
4 of the groove design features depicted in Figs. 5 and 6 are utilized. For
5 example, and by way of example only, the immediately preceding sentence
6 relationship might be achieved by constant dimension "Z" in the set, and
7 variability in one or more other dimensions in Fig. 5, or even in fundamental
8 groove shape changes between clubs. Further by way of example only,
9 conventional square grooves, v-grooves or other existing or yet-to-be developed
10 grooves of constant shape throughout a correlated set, yet with variable
11 size/widths, could be employed. Various combinations could of course be
12 employed.

13 Further by way of example only, multiple alternate and preferred
14 embodiments which can be utilized to achieve this relationship are described
15 with reference to Figs. 7-12. Referring first to the Fig. 7 embodiment, an
16 individual groove configuration 75 is depicted. Groove 75 comprises a
17 base 22 and opposing sidewalls 24 which diverge from base 22 and extend
18 outwardly in the direction of a front striking face 26. Sidewalls 24 comprise
19 opposing protrusions 28 which extend into groove 75 proximate front striking
20 face 26. Opposing sidewall protrusions 28 are preferably of the same shape
21 and size, as shown. Sidewall protrusions 28 have an outer surface 29, which
22 in the preferred embodiment is largely semicircular and preferably of
23 substantially constant radius, preferably from at least just laterally inwardly of
24 where extended line 24 intersects with front striking face 26 in accordance

1 with the existing U.S.G.A. 30° Rule. The respective opposing sidewall
2 protrusions preferably comprise a curved outer surface which starts from the
3 front striking face, and most preferably curves continuously to its sidewall.

4 Sidewall protrusions 28 project inwardly from sidewalls 24 a
5 dimension "T" to an apex 30 which is defined on a sidewall protrusion
6 surface which is curved. In the depicted drawings, "T" is the distance from
7 the apex 30 along a straight horizontal line to where the sidewall would have
8 been if the projection was not there. Further preferably and as shown,
9 apexes 30 are displaced inwardly from front striking face 26 in the direction
10 of base 22. Further preferably, outer surface 29 is semicircular of constant
11 radius "R" from an origin 31 received outwardly of sidewalls 24.

12 Opposing sidewall projections 28 can be considered as having respective
13 top-most portions 32 and bottom-most portions 34. Top-most portions 32 start
14 projecting into groove 75 from front striking face 26. Accordingly in the
15 preferred embodiment, the respective sidewall protrusions have an outer
16 surface 29 characterized by a substantially constant radius of curvature which
17 starts from front striking face 26. Further, bottom-most portions 34 start
18 projecting into groove 75 from sidewall locations 36. Preferably and as
19 shown, opposing sidewalls 24 extend straight linear from proximate base 22
20 to bottom-most portions 34 of opposing sidewall protrusions 28 at
21 locations 36. Groove 75 has some maximum groove width "S" from where
22 30° lines "V" become tangent with surface 29, again all preferably in
23 accordance with the present U.S.G.A. 30° and other rules regarding groove
24 design.

1 Fig. 8 depicts but one additional alternate embodiment to that depicted
2 by Fig. 7. Like numerals from the Fig. 7 embodiment are utilized where
3 appropriate, with differences being indicated with the suffix "b". The Fig. 8
4 groove embodiment 75b is the same as that of Fig. 7, and includes a further
5 addition of the Fig. 5 embodiment base projection 55.

6 The invention contemplates additional aspects in a correlated set of
7 individually numbered golf club irons having heads progressing from a high
8 numbered head to a low numbered head. Groove sidewalls of respective
9 heads comprise opposing protrusions which extend into the groove proximate
10 the front striking face of the head. In one embodiment, the sidewall
11 protrusions extend laterally further into the grooves in the higher numbered
12 head compared to the lower numbered head in the pair. In another
13 embodiment, the sidewall protrusions extend laterally further into the grooves
14 in the lower numbered head compared to the higher numbered head in the
15 pair. Again in either, the groove configuration might otherwise be the same
16 or different for different clubs within the set.

17 Figs. 9 and 10 depict but one exemplary embodiment. Like numerals
18 from the Fig. 7 embodiment are utilized where appropriate, with differences
19 being indicated with the suffix "c". Here, different sidewall protrusions 28
20 are depicted as having differing apexes 30, 40 and 45 for different clubs,
21 with corresponding different dimensions R, R', and R" from origins 31, 33
22 and 35, respectively, and different sidewall displacements T, T' and T".
23 Figs. 9 and 10 depict sidewall protrusion surfaces for each projection for each
24 head within the set which are formed about a respective constant radius of

1 curvature which is the same for each sidewall protrusion surface for the head.
2 Yet, Figs. 10 and 11 also depict different radii of curvature for different
3 pairs of the set, with apexes 30, 40 and 45 depicting different radii for
4 different clubs.

5 Most preferably, and with all other aspects of the groove design
6 preferably remaining constant but for the sidewall projection configuration, and
7 to achieve decreasing golf ball spin in going from the lower numbered head
8 to the higher numbered head in the pair if a golf ball were hit by the faces
9 by identical impacts at the same loft angle, the sidewall protrusions extend
10 laterally further into the groove in the higher numbered head compared to the
11 lower numbered head in the pair. Accordingly, for otherwise identical impacts
12 of a golf ball at the same loft angle, a groove design with apex 45 is
13 expected to produce the most backspin, with projection apexes 40 and 30
14 producing progressively decreasing backspin on the golf ball.

15 Fig. 11 illustrates but one example alternate embodiment groove design
16 for a correlated set of individually numbered golf club irons having heads
17 progressing from a high numbered head to a low numbered head. Like
18 numerals from the Fig. 9 embodiment are utilized where appropriate, with
19 differences being indicated with the suffix "d". Here, projections 28 are
20 shown for a correlated set of clubs to have different apexes 40d and 45d
21 which are formed over curved outer surfaces having substantially constant
22 radius of curvature which is the same for each sidewall protrusion surface for
23 the head and for the set, and for accordingly pairs of the set. Most
24 preferably, and with all other aspects of the groove design preferably

1 remaining constant but for the sidewall projection configurations, and to
2 achieve decreasing golf ball spin in going from the lower numbered head to
3 the higher numbered head in the pair if a golf ball were hit by the faces
4 by identical impacts at the same loft angle, the sidewall protrusions extend
5 laterally further into the groove in the higher numbered head compared to the
6 lower numbered head in the pair, at least up to some undetermined value.
7 Accordingly, for otherwise identical impacts of a golf ball at the same loft
8 angle, a groove design with apex 30 is expected to produce the most
9 backspin, with projection apexes 40d and 45d producing progressively
10 decreasing backspin on the golf ball.

1 With respect to the Figs. 9 and 10 embodiment, an by way of
2 example only, exemplary preferred radii of curvatures (thereby dimension "R")
3 for each club 2 through PW are shown in Table II below. Radius of
4 curvature is preferably constant.

5 **TABLE II**

6

	Radius of Curvature (Dimension "R", in inches)
#2	0.0010
#3	0.0014
#4	0.0018
#5	0.0022
#6	0.0026
#7	0.0030
#8	0.0034
#9	0.0038
PW	0.0042

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1 With respect to the Figs. 9 and 10 embodiment, exemplary preferred
2 dimensions "T" for each club 2 through PW are shown in Table III below.

3 **TABLE III**

4

	Dimension "T", in inches
#2	0.0001
#3	0.00014
#4	0.00018
#5	0.0004
#6	0.00065
#7	0.0009
#8	0.0014
#9	0.0017
PW	0.0020

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1 With respect to the Fig. 11 embodiment, and again by way of example
2 only, Table IV depicts exemplary projection ranges "T" for clubs 2 through
3 PW.

4 **TABLE IV**

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	Exemplary Projection Ranges, in inches
#2	0.0038
#3	0.0034
#4	0.0028
#5	0.0024
#6	0.0020
#7	0.0016
#8	0.0012
#9	0.0008
PW	0.0004

14

15 In one implementation, the invention also contemplates in another aspect
16 a method of matching a golf club to a golfer. Such method comprises
17 manufacturing an inventory array of golf clubs of a given number golf club
18 head. Individual heads comprise a front striking face, a sole, a toe and a
19 heel. The front striking face has a top and a bottom. The front striking
20 face of individual heads has a series of grooves of common cross-sectional
21 shape from the top to the bottom. The golf club heads of the golf clubs
22 of the inventory array are characterized at least by at least two different
23 groove designs in the front striking face. Such groove design differences, by
24

1 way of example only, might be as described above with respect to one or
2 more of the preferred embodiments, or otherwise varying groove designs in
3 the front striking face of a golf club of a particular number.

4 The method further includes considering an attribute of a golfer's golf
5 game. Such attribute might include, by way of example only, a golfer's
6 swing as determined visually, digitally or otherwise, a golfer's handicap, or
7 some other attribute. The method contemplates selecting a golf club of the
8 number for the golfer from the inventor array based at least in part on the
9 considered attribute in relation to groove design within the inventory array.

10 For example, and by way of example only and with respect to degree
11 of groove spin, a 3-iron for a low handicap golfer might be selected to
12 maximize spin as compared to selecting a 3-iron for a golfer with a higher
13 handicap. For example, the low handicap golfer might have an optimized set
14 of clubs selected which tends to produce greater spin in the long irons than
15 in the short irons. Alternately by way of example only, the low handicap
16 golfer might have an optimized set of clubs selected which tends to produce
17 constant spin throughout the set. The reverse or same relationships might of
18 course also be selected low handicap and high handicap golfers.

19 Another considered aspect of the invention includes a method of
20 matching a set of golf clubs to a golfer. Such comprises manufacturing an
21 inventory array of golf club sets having individually numbered golf club heads
22 progressing from a high numbered head to a low numbered head. Individual
23 heads comprise a front striking face, a sole, a toe, and a heel. The front
24 striking face has a top and a bottom. The front striking face of individual

1 heads have a series of grooves of a common cross-sectional shape from the
2 top to the bottom. The golf club sets of the inventory array are
3 characterized at least by at least two different groove designs in the front
4 striking face in at least one of the same number heads between at least two
5 of the sets.

6 An attribute of the golfer's golf game is considered, for example, as
7 described above. A golf club set for the golfer is selected from the
8 inventory array based at least in part on the considered attribute in relation
9 to groove design within the inventory array. Accordingly, this aspect of a
10 matching method of the invention is considered with respect to a set of golf
11 clubs, wherein the immediately preceding matching method is with respect to
12 an individual golf club, and not necessarily to a set.

13 In compliance with the statute, the invention has been described in
14 language more or less specific as to structural and methodical features. It
15 is to be understood, however, that the invention is not limited to the specific
16 features shown and described, since the means herein disclosed comprise
17 preferred forms of putting the invention into effect. The invention is,
18 therefore, claimed in any of its forms or modifications within the proper
19 scope of the appended claims appropriately interpreted in accordance with the
20 doctrine of equivalents.